International Civil Aviation Organization
North American, Central American and Caribbean Office

WORKING PAPER

AO/TF/4/ATFM/TF/6/CIIFRA/8 — WP/06
05/09/24

Fourth Meeting of the North American, Central American and Caribbean Working Group (NACC/WG) Airspace Optimization Task Force (AO/TF/4), Sixth Meeting of the NACC/WG Air Traffic Flow Management Implementation Task Force (ATFM/TF/6) and Eight Meeting of the CANSO IATA ICAO Free Route Airspace (CIIFRA/8) Team (AO/TF/4/ATFM/TF/6/CIIFRA/8)
Havana, Cuba, 23 to 27 September 2024

Agenda Item 4: **NACC/WG Airspace Optimization Task Force (AO/TF) Updates**

AIRSPACE OPTIMIZATION TASK FORCE REPORT TO NACC WG MEETING

(Presented by the AO/TF Rapporteur)

<table>
<tr><td colspan="2">EXECUTIVE SUMMARY

This working paper presents an update of the work, and activities conducted by the Airspace Optimization Task Force (AOTF).</td></tr>
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<tr><td>Strategic Objectives:</td><td>• Safety
• Air Navigation Capacity and Efficiency
• Economic Development of Air Transport
• Environmental Protection</td></tr>
<tr><td>References:</td><td>• Eighth North American, Central American and Caribbean Working Group Meeting (NACC/WG/8) 29 August- 1 September 2023
• Third Meeting of the North American, Central American and Caribbean Working Group (NACC/WG) Airspace Optimization Task Force (AO/TF/3), 25 to 29 September 2023
• Twenty-first Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS 21) 14 to 17 November 2023</td></tr>
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1. Introduction

1.1 The importance of efficient Airspace Organization and Management (AOM) in promoting safe, efficient and seamless air traffic operations has been recognized by all stakeholders. The harmonized implementation of Free Route Airspace (FRA) to optimize flight paths, reduce fuel consumption, and minimize environmental impact is a major priority for the Region as a whole. FRA is an Element within Block 1 (B1/1) of the overarching Aviation System Block Upgrade (ASBU) Module of FRTO - Improved operations through enhanced en-route trajectories.

1.2 The GREPECAS/21 (Santo Domingo, Dominican Republic, November 15-17, 2023) meeting approved the Caribbean/South American Airspace Optimization Programme and the NEOSPACE -1 project. GREPECAS Decision 21/07 identified the first goal of the project as the development of an action plan geared towards a harmonized approach to the optimization of the airspace across the CAR/SAM Region; taking into consideration:

a) ASBU modules/elements related to APTA and FRTO;
b) Participation of States;
c) Input from all relevant stakeholders; and
d) Continuation and strengthening of ongoing implementations.

1.3 The NACC/WG AOTF has had several meetings with the SAM/IG and though it was acknowledged that although there are several differences that exist within both the CAR and SAM regions, there is definitely an opportunity to agree on an overarching concept document *"Harmonized Horizons: Airspace Optimization in CAR/SAM Regions";* which will serve to guide the airspace optimization efforts. The NEOSPACE-1 discussions also highlighted the need to coordinate the development of the process with the North American (NAM) region to ensure harmonization.

1.4 The NACC/WG should note that due to unforeseen circumstances, there was a transition period between the replacement of the ATM Regional Officer with responsibility for the AOTF. Additionally, the AOTF meeting which was originally scheduled for March 2024, was postponed until September 2024; thereby affecting the ability of the taskforce to work on some of the tasks identified in its work program. It is expected that during the AOTF/4 meeting, to be held in Cuba from 23-27 September 2024, several outstanding tasks will be worked on; and the updates from that meeting will be provided in a presentation during the plenary of the NACC/WG/9 meeting.

2. AO Task Force Progress and Results

2.1 *Creation of an Overarching Document for Free Route Airspace (FRA):* An overarching framework has been developed to support the implementation of Free Route Airspace (FRA) in both the CAR and SAM regions. This document is designed to ensure that efforts are aligned and mutually supportive, facilitating seamless and efficient air traffic operations across both regions. The initial discussion between the AOTF and the SAM/IG have resulted in an agreement that the first phase of a harmonized approach to cross-border FRA will concentrate on the upper airspace, however, this does not prevent any State/Organization from engaging in Upper/Lower airspace designs as may be necessitated by their own needs.

2.2 *Final Submission of the AOTF CAR Airspace Concept:* The final draft of the CAR Airspace Optimization Concept has been submitted for approval. This concept is aligned to the overarching framework "Harmonized Horizons: Airspace Optimization in CAR/SAM Regions" and represents a significant step towards enhancing the efficiency and safety of airspace management within the CAR region, paving the way for future operational improvements. The CAR Airspace Optimization Concept is presented as **Appendix A** for review and approval.

2.3 *Submission of SDR Guidelines to CAR States:* At the Third Meeting of the North American, Central American and Caribbean Working Group (NACC/WG) Airspace Optimization Task Force (AO/TF/3), Fifth Meeting of the NACC/WG Air Traffic Flow Management Implementation Task Force (ATFM/TF/5) and Seventh Meeting of the CANSO IATA ICAO Free Route Airspace (CIIFRA/7) Team (AO/TF/3/ATFM/TF/5/CIIFRA/7) held from 25 to 29 September 2023, a pivotal decision was made to initiate Strategic Direct Routing (SDR) trials as part of our collective efforts to optimize airspace management and enhance aviation efficiency in the North American, Central American, and Caribbean (NACC) region. During the meeting, a practical exercise was conducted as an example to assist States/Organizations in performing an assessment of their capability to engage in SDR trials. Guidance material was provided to all participants and is available to all via the following link on the ICAO NACC website:
https://www.icao.int/NACC/Documents/Meetings/2023/ATFMTF5/Guidance%20material%20for%20ANSPS%20on%20SDR%20trial%20implementation.pdf

2.4 *CANSO IATA ICAO Free Route Airspace (CIIFRA) updates:*

a) *Participation:* Currently, 12 airlines, including major carriers such as American Airlines, Delta Airlines, and United Airlines, along with cargo and general aviation entities, are actively involved in CIIFRA initiatives.

b) *Inter FIR SDR Trial:* COCESNA and SENEAM initiated an inter FIR SDR Trial involving major airlines like American Airlines, Delta Airlines, United Airlines, and Aeromexico, with plans for temporary suspension in September 2024 for system updates.

c) *Route Standardization Efforts:* Efforts to standardize flight plan filing procedures in the Latin America and the Caribbean (LAC[1]) region are underway, supported by ICAO NACC recommendations to streamline AIP publication and improve accessibility.

These developments underscore CIIFRA's commitment to enhancing airspace efficiency and operational flexibility across the region. Key actions include advancing SDR implementations, fostering collaboration with international partners like EUROCONTROL, and advocating for standardized procedures to optimize flight operations.

2.5 *Summary of State's/Organization's progress:*

a) COCESNA has published a supplement that permits Free Route Airspace (FRA) for overflights and provides some direct routing options for departures and arrivals within Central America. They are currently conducting trials with Mérida Control (SENEAM) to facilitate cross-border operations or direct routings without the need for boundary waypoints. There are plans to embark upon a project to redesign the Central American airspace in coordination with COCESNA and the six Central American States. This effort aims to minimize conflicts during the transition between upper and lower airspace as much as possible.

b) Dominican Republic has published the Aeronautical Information Circular (AIC) number 07/23 allowing direct strategic routing (SDR) in the Santo Domingo FIR, without time or flight level restrictions. They are working with their ATM system supplier to enhance medium and long-term conflict detection. Curaçao and Dominican Republic are working on the exchange of automatic messaging, which would allow proper interoperability for air traffic coordination between the two adjacent FIRs. There are plans to redesign their airspace to include improvements to SIDs and STARs by May 2025.

c) SENEAM continues to advance the SDR project, with 45 UPR routes now available and trials commencing in Merida airspace. Effective July 1st, direct routes from Mexico City ACC to MMUN have been implemented daily from 0000 – 1200 UTC. They have published an AIC with all available UPRs and the information is also available via the following link: https://seneamatfm20220921.azurewebsites.net/seneamuproutes

[1] Region defined by CANSO.

d) Over the period 2023 – 2024 Trinidad and Tobago has held several briefing sessions with the TMAs of the Eastern Caribbean. These efforts are part of a broader initiative aimed at optimizing the lower airspace within the Piarco Flight Information Region (FIR) and ensuring seamless air traffic flow throughout the region. Trinidad and Tobago published an Aeronautical Information Circular (AIC) which provides airline flight dispatchers with a series of UPRs that can be filed in flight plans. Since publishing the AIC in 2022, Trinidad and Tobago has approved individual airline requests for waypoint to waypoint filing within the TTZP FIR. The Oceanic Sector of the Piarco FIR is fully SDR. The unrestricted implementation of SDR within the continental airspace has been delayed due to ongoing issues with VHF communications. Currently, a project is underway to upgrade the VHF communication system, involving a transition from an analogy system to IP circuits.

e) Cuba intends to propose a feasibility study to assess the potential benefits of a program designed to verify the efficiency of airspace optimization activities independently and objectively by States and ANSPs. This study aims to focus on the implementation of ASBU elements related to the CIIFRA phases, ensuring compliance with international agreements and striving to enhance operational safety, air navigation efficiency, and environmental protection across the region.

f) In 2021 Curacao made changes to the TNCF Terminal airspace and redesigned the SIDs and STARs to improve the flow of inbound and outbound traffic to the ABC airports. VFR routes were established between the ABC airports to standardize the flow of domestic flights for CAT A & B aircraft. In 2025, Curacao plans to introduce Terminal Control Service and is currently training and certifying ACC rated ATCOs to provide this service (85% are already endorsed). An adapted Transitional Altitude and Level is being prepared for the Curacao TMA in 2027.

2.6 *Request for Collaboration Across ATM-Related Disciplines:* An initial analysis on the roadblocks and challenges faced by CAR States has indicated that there are several factors in the areas of Aerodromes and Ground Aids (AGA), Aeronautical Information Management (AIM), Communications, Navigation, and Surveillance (CNS), Meteorology (MET) that require further collaboration with the other NACC/WG TFs with Subject Matter Expertise in those respective areas. This collaborative approach is essential for shaping the future of ATM, identifying potential roadblocks, and fostering a comprehensive understanding of the challenges and opportunities ahead. The analysis is provided in **Appendix B** to this report.

2.7 *KPIs:* Seven (7) Key Performance Indicators (KPIs) that measure various aspects of airspace performance, including departure and arrival punctuality, en-route efficiency, and fuel consumption are being considered by the AOTF. These KPIs will provide valuable insights into the current state of air traffic management and identify areas for improvement in line with ICAO's global initiatives. During the AOTF/4 meeting in Cuba, the AOTF will discuss both the capability of the region to establish these KPIs and the methodology to be followed. Determining factors will include the availability of base-line data as well as the regular acquisition and quality of current and future data. The seven (7) KPIs identified are listed below:

a) KPI01 Departure punctuality
b) KPI05 Actual en-route extension
c) KPI07 En-route ATFM delay
d) KPI08 Additional time in terminal airspace
e) KPI12 Airport/Terminal ATFM delay
f) KPI14 Arrival punctuality
g) KPI16 Additional fuel burn

The AOTF will present additional details on the KPIs during its updated presentation in the NACC/WG plenary.

3. Discussion

3.1 Airspace Optimization is not a stand-alone initiative as it encompasses much more than AOM. ATM procedures along with Air Traffic Services Letters of Agreements (ATS LOAs); CNS systems and infrastructure; AIM/AIS capabilities and processes along with accurate and dynamic MET information; are all enablers to a harmonized and sustainable aviation environment.

3.2 The table below shows a breakdown of the various elements and blocks of the ASBU module, FRTO.

FRTO Block	**Description**	**Enablers**
Block 0	En-route trajectories are enhanced by using more direct routings, and collaborative airspace management process and tools. ATCOs are assisted by tools for the conflict identification and conformance monitoring. Directs may be tactical or based on prior approval such as the case with UPRs.	**Required** • VHF coverage • ATS procedures/LOAs/MOUs • ATCO/Pilot training/briefings • ATFM procedures/LOAs/MOUs
		Recommended • Surveillance • Basic ATM System with MTCD • ATFM system • CPDLC

FRTO Block	Description	Enablers
Block 1	In continental airspace, the most important operational improvement is related to Free Route Airspace (FRA) as the continuation of direct routing introduced in FRTO B0. For airspace where FRA cannot be deployed, or for connectivity between FRA and terminal manoeuvring areas (TMAs), RNP routes might be considered. Collaborative airspace management is enhanced with new features such as real time airspace management (ASM) data exchanges. Additional system capabilities such as dynamic sectorization intend to align the traffic demand to the available capacity.	**Required** • VHF coverage • Surveillance • ATS procedures/LOAs/MOUs • ATCO/Pilot training/briefings • Basic ATFM system including procedures/LOAs • ATM System with advanced MTCD
		Recommended • CPDLC • AIDC • Advanced ATFM system • Regional ATFM coordination • RNP routes
Block 2	The most important operational improvement is related to the large scale cross border Free Route Airspace (FRA) as the continuation of FRTO B1. Large scale FRA (e.g. Continental operations) are envisaged to be widely deployed, except where structure provides for efficient performance-based routings into and out of high density airspace. There is a need ensure a smooth transition between FRA and highly structured airspace based on Dynamic Airspace Configuration (DAC) principles. There is a need for more dynamic, accurate and precise information on constraints allowing the FRA extension and accommodation of different business trajectories.	**Required** • VHF coverage • Surveillance • ATS procedures/LOAs/MOUs • ATCO/Pilot training/briefings • ATM System with advanced MTCD • CPDLC • AIDC • Advanced ATFM system which includes Regional interoperability • RNP routes

3.3 Both the NACC/WG AOTF and the SAM/IG agree that most of the States/Organizations in the NAM/CAR/SAM regions are in a transition state between FRTO Block 0 and Block 1. As mentioned above, some ANSPs have already implemented SDRs within their own airspace. Others have implemented restricted SDRs and most ANSPs have approved some type of UPRs though their airspace. Testing is being conducted for cross-border SDRs which are setting the platform for FRTO Block 2. These tests are important as they provide much needed feedback on the roadblocks to further implementation.

3.4 The AOTF has identified the following list of challenges to the transition to FRA:

a) The requirement of some Flight Data Processors (FDP) within the automated ATM system to accept flights without a prior known position in its database.
b) The inability of the automated ATM system to predict conflicts on random tracks;
c) Lack of harmonization of UPR publications in States' AIPs;
d) Lack of training and briefings to Air Traffic Controllers (ATCOs) and pilots;
e) Outdated LOAs/MOUs between adjacent facilities;
f) Connectivity between upper airspace and TMAs;
g) Financial cost of system upgrades; and
h) Lack of SMEs within some States with knowledge on ATM systems.

This list is not exhaustive as there may be other challenges not mentioned above.

3.5 Notwithstanding these challenges, it is imperative that the region work towards the goal of harmonized, cross-border FRA implementation. The following are a list of the objectives which, as a result of transitioning to FRA, will contribute to overall improvements in safety and efficiency:

a) Improved flexibility for dispatchers to file routes based on operational considerations;
b) Improved predictability based on advanced information on intended flight paths;
c) Reduced coordination between ATCOs; and
d) Reduced transmissions between ATCOs and pilots.

4. Conclusions and Recommendations

4.1 The collaboration between the ICAO NAM/CAR and SAM regions is vital to achieving the overarching goals of airspace optimization and ensuring the safe, efficient, and sustainable management of global air traffic. By working together, leveraging shared expertise, and addressing regional complexities, both regions can enhance their airspace capabilities and contribute to the global aviation community's advancement.

4.2 It is imperative for the NACC/WG task force groups to meet and discuss the challenges identified; and to find both short – medium term solutions as well as to develop a long-term, strategic outlook for future airspace harmonization and development.

4.3 The region needs to establish a culture that promotes data-driven decision making. Plans should be developed based on evidence and insights derived from comprehensive data analysis. The establishment of KPIs and the subsequent performance measuring will complement the process and lead to more effective implementations.

4.4 AOTF will collaborate with States/organizations to assess the region's readiness and capabilities to transition to SDR safely and effectively. Additionally with the input from other task forces, CANSO, IATA and industry the AOTF will initiate discussions for testing cross border SDRs across the CAR region; and through coordination with the SAM/IG, extend these tests into the SAM region.

6. Suggested actions

6.1 The Meeting is invited to:

a) take note of the information presented in this Working Paper;

b) review and endorse the NEOSPACE-1 project overarching concept document "Harmonized Horizons: Airspace Optimization in CAR/SAM Regions";

c) approve the Final AO Airspace Concept document attached as Appendix B; and

d) support the use of data analysis for effective decision making and utilize KPIs to keep track of implementation roadmaps and milestones within our own regions in order to measure progress.

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APPENDIX A / APÉNDICE A

AVAILABLE ONLY IN ENGLISH / DISPONIBLE ÚNICAMENTE EN INGLÉS

INTERNATIONAL CIVIL AVIATION ORGANIZATION

OPTIMIZED AIRSPACE CONCEPT DOCUMENT FOR THE CAR REGION 2025-2030

ICAO REGIONAL TECHNICAL COOPERATION PROJECT — "MULTI-REGIONAL CIVIL AVIATION ASSISTANCE PROGRAMME (MCAAP)"

Version 1.0

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Contents

1. Introduction

1.1

Background: This document was started under the PBN Taskforce in 2018 and continued as the taskforce evolved into the Airspace Optimization Taskforce in 2022. This document is in alignment with the current regional objectives; and has been and will continue to be coordinated with other regions as deemed necessary.

1.2 The aim is to develop and put into effect an optimized airspace concept document for the CAR region. Subject Matter Experts (SMEs) from project member states, led by the ICAO NACC Regional Office contributed to the development of this concept. The document will contain recommendations for harmonized separation standards, airspace restructuring, and the ongoing use of Performance-Based Navigation (PBN). It also sets a goal to transition to Free Route Airspace (FRA).

1.3 The GANP will be used as guidance to determine the generic requirements to optimize the airspace of the CAR Region, including the transition to Free Route Airspace (FRA).

1.4 The Airspace Optimization Taskforce (AOTF) will develop a methodology for assessing each State´s readiness to transition to FRA in the future

1.5 The SMEs, in a collaborative effort with the CIIFRA team, have developed the optimized airspace concept and the transition roadmap for the CAR Region, ensuring all stakeholders are part of this crucial process.

2. Objectives

2.1 The main objective of this document is to serve as a regional guide on the process of moving towards FRA and following up with the ICAO program No Country Left Behind (NCLB). The AOTF, working in close collaboration with the States, will assist them with their individual airspace optimization plans.

2.2 Specific objectives:

The CAR Region Airspace Optimization has the next specific objectives aligning with the upcoming Air Navigation Plan (ANP) CAR/SAM Vol III.

Safety: Reduce ATS incidents and Controlled Flights Into Terrain (CFIT) by harmonizing airspace and improving of STARs, SIDs and APPs.

Capacity: Allow more flexible use of airspace to avoid traffic saturation over-determined areas.

Efficiency: Reduce work overload for crew members and Air Traffic Controllers.

Environment: Reduce CO2 emissions and noise over sensitive areas serving the states and linking to Vol III.

2.3 Benefits

1. Help States to comply with Aviation System Block Upgrade (ASBU) airspace optimization requirements.
2. Increase harmonization between adjacent States.
3. Reduce aircraft navigational equipment requirements.
4. Reduce distance travelled from point to point for each aircraft operation.
5. Improve aircrafts Fuel savings and reduction of CO_2 emissions.
6. Increase continuous climb and descend operations for aircraft.
7. Reduce the use of holding patterns.
8. Provide greater access through mountainous areas.
9. Reduce noise in the vicinity of airports.
10. Reduce pilot and Air Traffic Control (ATC) workload.
11. Reduce radio congestion.
12. Reduce ANSP operational cost through the reduction of the requirement for ground navaids.
13. Reduce GPWS.
14. Increase flexible use of airspace.

3. Scope

3.1 This optimized airspace concept is intended for the following States/Organizations of the Caribbean (CAR) Region:

UPPER AIRSPACE	LOWER AIRSPACE
COCESNA (CENTRAL AMERICA)	BELIZE (BELIZE TMA)
	GUATEMALA (LA AURORA TMA)
	HONDURAS (LA MESA TMA; TONCONTIN TMA; ROATAN ATZ; LA CEIBA CTR; PALMEROLA)
	EL SALVADOR (EL SALVADOR TMA)
	NICARAGUA (MANAGUA TMA)
	COSTA RICA (EL COCO TMA; LIBERIA TMA)
MEXICO (MEXICO, MAZATLAN OCEANIC, MERIDA)	ACAPULCO; CANCÚN-COZUMEL; CIUDAD DEL CARMEN; CIUDAD JUAREZ; CIUDAD OBREGON; CIUDAD VICTORIA; CULIACÁN;CHIHUAHUA; DURANGO; GUADALAJARA; HERMOSILLO; IXTAPA-ZIHUATANEJO; LA PAZ; LOS MOCHIS; LEÓN - AGUASCALIENTES; MANZANILLO; MATAMOROS; MAZATLAN; MERIDA; MEXICO CITY; MONTERREY; MORELIA; NUEVO LAREDO; OAXACA; PUEBLA; PUERTO VALLARTA; QUERÉTARO; REYNOSA; SALTILLO; SAN JOSE DEL CABO; SAN LUIS POTOSÍ; TAMPICO; TIJUANA; TORREÓN; TUXTLA GUTIÉRREZ; VERACRUZ; VILLAHERMOSA;
JAMAICA (KINGSTON)	JAMAICA TMA;
HAITI (PORT AU PRINCE)	PORT AU PRINCE TMA
CUBA (HAVANA)	HAVANA TMA; SANTA CLARA TMA; SANTIAGO TMA
CURACAO (CURACAO)	CURACAO TMA; JULIANA TMA; BEATRIX CTR; FLAMENGO CTR;
DOMINICAN REPUBLIC (SANTO DOMINGO)	PUNTA CANA TMA; LAS AMERICAS TMA; CIBAO TMA
UNITED STATES (SAN JUAN)	SAN JUAN
TRINIDAD AND TOBAGO (PIARCO)	TRINIDAD AND TOBAGO (PIARCO CTR)
	ANTIGUA AND BARBUDA (VC BIRD TMA)
	BARBADOS (ADAMS TMA)
	MARTINIQUE (MARTINIQUE TMA)
	ST LUCIA (ST LUCIA CTR)

	ST VINCENT AND THE GRENADINES (ARGYLE TMA)
	GRENADA (MAURICE BISHOP TMA)
	GUADELOUPE (POINTE-A-PITRE-TMA)

Note: Due to the high flow of traffic and airspace complexity that exists between the CAR Region and the Miami Oceanic, Houston Oceanic and New York Oceanic FIRs, it is recommended that a point of contact from these FIRs be established to coordinate with the rest of the Region.

4. Airspace Optimization Concept

4.1 General

4.1.1 The Airspace Optimization Concept is a plan with the potential to significantly benefit all current and envisioned users of the airspace. By improving the safety, capacity, and efficiency of operations in the CAR Region, we are paving the way for future growth and development in the aviation industry.

4.1.2 Airspace Optimization utilizes all available technologies, procedures and concepts, including **harmonized separation standards, airspace restructuring, PBN and FRA.**

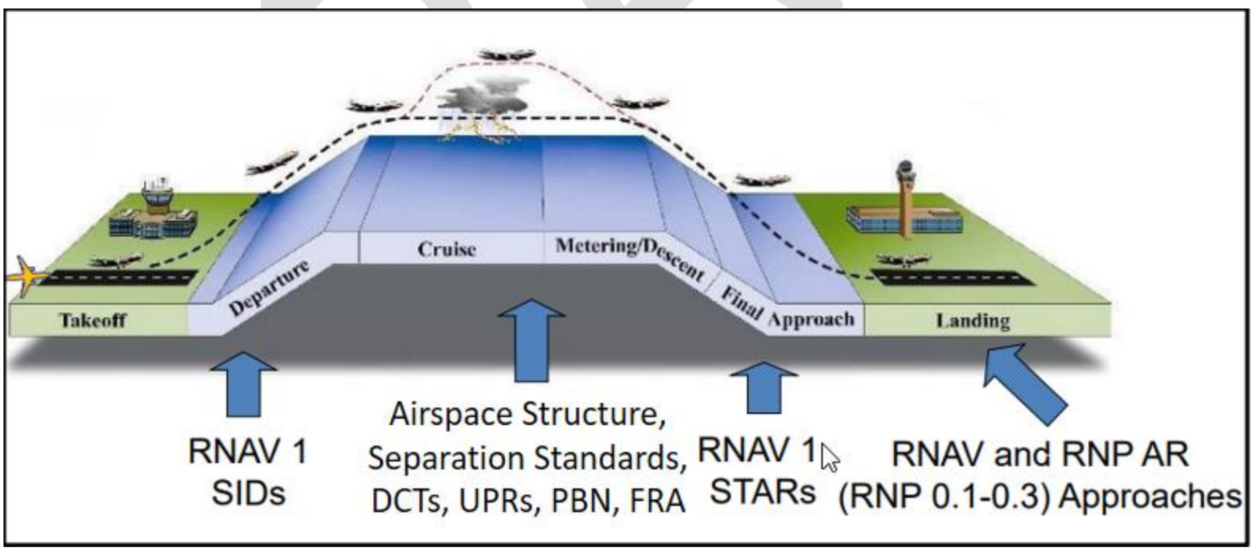

Figure 1: Airspace Optimization throughout all phases of flight

4.2. Goals for the Airspace Optimization

4.2.1 Table 1 below reflects the goals established by the taskforce to meet the Specific Objectives of Airspace Optimization in the Region:

	Specific Objective				Goals
	Saf.	Cap.	Eff.	Env.	
Airspace Optimization		x	x	x	Implementation of RNAV 5 routes as agreed to in the Regional ANP.
		x	x	x	Continue the airspace optimization already begun in point to point trajectories, UPR trials and eventual transition to FRA.
		x	x	x	Conduct an analysis for the implementation of RNP 2 for continental airspace routes.
		x	x	x	Decide upon a date for the regional implementation of RNP 4 for oceanic airspace routes.
		x	x	x	For Oceanic airspace, use of 30 NM longitudinal and lateral separation (WHERE APPLICABLE) and 50 NM separation for all other oceanic areas.
	x				Removal of conventional routes made redundant by PBN route implementation.
	x	x	x	x	Harmonization of upper airspace routes with RNAV/RNP 1 STAR/SIDs (CCOs and CDOs) of TMAs within the FIR.
		x	x	x	For continental airspace, implementation of 20 NM longitudinal separation at FIR Boundaries (WHERE APPLICABLE).
	x	x	x	x	Implementation of RNAV/RNP 1 STAR/SIDs (CCOs and CDOs) to TMAs within the FIRs.
	x				Implementation of LNAV approaches for those International Airports so determined.
	x				Implementation of LNAV/VNAV (BARO VNAV) Approaches if analysis determines a benefit.
	x		x	x	Implementation of RNP AR Approaches/Departures if analysis determines a benefit.
	x		x	x	Implementation of APV (GLS/LPV) Approaches if analysis determines a benefit.

Table 1: Specific Objectives of Airspace Optimization in the Region

4.3 Harmonized Separation Standards

4.3.1 For continental airspace, 20NM longitudinal separation at FIR Boundaries should be implemented (WHERE APPLICABLE).

4.3.1.1 This requirement is based on the Longitudinal Separation Minima based on distance using Distance Measuring Equipment (DME) and/or GNSS.

4.3.1.2 Separation shall be established by maintaining not less than the distance(s) between aircraft positions as reported by reference to DME in conjunction with other appropriate navigation aids and/or GNSS. This type of separation shall be applied between two aircraft using DME, two using GNSS, one using DME, and one using GNSS. Direct controller-pilot VHF voice communication shall be maintained while such separation is used.

4.3.1.3 For oceanic airspace, use of 50 NM lateral separation.

4.3.1.4 RNAV 10 (designated and authorized as RNP 10) supports 50 NM lateral and 50 NM longitudinal distance-based separation minima in oceanic or remote area airspace.

4.3.1.5 For oceanic airspace, use of 30 NM longitudinal and lateral separation.

4.3.1.6 RNP 4 supports 30 NM lateral and the 30 NM longitudinal distance-based separation minima in oceanic or remote area airspace.

4.3.1.7 The taskforce acknowledges that ANSPs across the region utilize varying separation standards, which leads to inefficient operations. The task force will continue the work that has already begun to harmonize the separation standards across FIR boundaries.

4.3.1.8 An analysis will be conducted to determine the timeline for implementing RNP 4 for oceanic airspace. This implementation, which will require collaboration between the Taskforce, ANSPs, and Airline Operators, has significantly improved our operations' efficiency and safety, providing a hopeful outlook for the future.

4.4 Airspace Structure

4.4.1 The taskforce acknowledges that regional airspace's current structure may be improved to achieve greater efficiencies.

4.4.2 The taskforce's analysis of the regional airspace aims to identify areas that could be enhanced through redesign or could benefit from a more efficient use of airspace. This work has the potential to lead to significant improvements in regional airspace management, underlining the impact of our efforts.

4.5 PBN Airspace Standards
4.5.1 Implementation of RNAV 5 routes as agreed to in the Regional ANP.

4.5.1.1 RNAV 5 operations are based on the use of RNAV equipment, which automatically determines the aircraft position in the horizontal plane using input from one or a combination of the following types of position sensors, together with the means to establish and follow a desired path: a) VOR/DME; b) DME/DME; c) INS or IRS; and d) GNSS.

4.5.1.2 The ANSP must assess the Navaid infrastructure to ensure that it is sufficient for the proposed operations, including reversionary modes. Gaps in navaid coverage are acceptable;; when this occurs, route spacing and obstacle clearance surfaces need to take account of the expected increase in lateral track-keeping errors during the “dead reckoning” phase of flight.

4.5.1.3 Regarding separation, in an ATC surveillance environment, the route spacing will depend on acceptable ATC workload and availability of controller tools; separation is considered as follows:

- 18 NM for opposite-direction routes,
- 16.5 NM for same-direction routes, and
- It is as low as 10 NM, where ATC intervention capability permits.

4.5.2 Removal of conventional routes made redundant by PBN route implementation.

4.5.2.1 RNAV/RNP routes are more efficient than conventional routes, providing “gate to gate” operations and also don't rely on radioaids installed on ground, improving safety and accuracy. Those are the main reasons why it is considered essential to replace conventional routes to RNAV/RNP routes, mainly where they are superposed.

4.5.3 Implementation of RNAV/RNP 1 STAR/SIDs (CCOs and CDOs) to TMAs within the FIRs.

4.5.3.1 The main objective is to improve safety, predictability of flights and airspace capacity while reducing noise, fuel consumption, emissions and pilot-controller communications.

4.5.3.2 CDO is an aircraft operating technique aided by appropriate airspace and procedure design and appropriate ATC clearances. It enables the execution of a flight profile optimized to the aircraft's operating capability, with low engine thrust settings and, where possible, a low drag configuration, thereby reducing fuel burn and emissions during descent. The optimum vertical profile is a continuously descending path, with a minimum of level flight segments only as needed to decelerate and configure the aircraft or establish a landing guidance system (e.g., ILS).

4.5.3.3 Continuous climb operations (CCO) is an aircraft operating technique enabled by airspace design, instrument procedure design, and facilitation by ATC, allowing for the execution of a flight profile optimized to the performance of the aircraft. CCO enables the aircraft to attain initial cruise flight level at optimum airspeed and engine thrust settings set throughout the climb, thereby reducing total fuel burn and emissions. Ideally, the departure design should allow arriving traffic to descend based on an optimum descent profile. Where the departure and arrival flows cannot be designed independently, there will need to be a fair and balanced compromise between the needs of the departure and arrival flow optimization, in which your decisions can significantly impact the overall efficiency and safety of the airspace.

4.5.3.4 An aircraft's fuel efficiency in terms of fuel burned per kilometer flown in level flight increases with height. However, the fuel used to climb to that altitude can be a significant part of the overall fuel used for the flight. Therefore, for any given route length, there is an optimum initial cruise flight level, which will depend upon the aircraft type and mass and the meteorological conditions of the day. CCO is only one of the tools involved in a complete airspace design. Throughout the design process, it's crucial to consider CDO, CCO, and other route modifications, as your diligence and responsibility can significantly impact the overall efficiency and safety of the airspace.

4.5.4 Implementation of LNAV approaches for those International Airports so determined.

4.5.4.1 RNP APCH LNAV procedures provide lateral guidance and can be defined with fly-by and fly-over waypoints as a "T" or "Y" type approach.

4.5.4.2 RNP APCH is defined as an RNP approach procedure that requires a lateral TSE of +/-1 NM in the initial, intermediate, and missed approach segments (MAS) and a lateral TSE of ±0.3 NM in the Final Approach Segment (FAS).

4.5.4.3 RNP APCH LNAV procedures do not rely on ground radioaids and are more accurate than conventional VOR/DME procedures. They also improve access being aligned in most cases with the runway centre line in most cases.

4.5.5 LNAV/VNAV (BARO VNAV) Approaches if analysis determines a benefit

4.5.5.1 Baro-VNAV approach procedures are classified as APV procedures in support of Type A 3D approach operations. They utilize a DA/H and not an MDA/H, neither a FAF nor a missed approach point (MAPt) is identified. They use obstacle assessment surfaces similar to those for ILS but based on the specific lateral guidance system.

4.5.5.2 Baro-VNAV procedures are used in association with LNAV-only procedures. The LNAV-only FAF and MAPt are needed to define the lateral areas and support the lateral guidance, but they are not used for the vertical navigation function.

4.5.5.3 Baro-VNAV procedures shall not be authorized with a remote altimeter setting.

4.5.5.4 By providing lateral and vertical guidance, BARO-VNAV approaches increase safety, access, and accuracy compared with an RNP APCH LNAV procedure.

4.5.6 Implementation of RNP AR Approaches/Departures if analysis determines a benefit.

4.5.6.1 Implementation of RNP AR procedures extends beyond procedure design. An authorization process for aircraft operators is necessary to ensure that other critical dependencies and associated airworthiness and operational procedure approvals are complete before implementation. Guidance on implementation and operational approval is provided in the PBN Manual.

4.5.6.2 RNP AR APCH is defined as an RNP approach procedure that requires a lateral TSE as low as ±0.1 NM on any segment of the approach procedure. These RNP AR APCH procedures are only published where significant operational advantages can be achieved, instilling confidence in their implementation.

4.5.6.3 RNP AR APCH are very useful in mountainous and noise-sensitive areas to improve access to the airport through radius and fix RF turns.

4.5.7 Implementation of APV (GLS/LPV) Approaches if analysis determines a benefit

4.5.7.1 GBAS is also known as LAAS (local area augmentation system). It can be used to achieve the accuracy required by CAT I-III by locating 4 receivers on the ground at precisely surveyed (centimeter-accuracy) positions.

4.5.7.2 The cost of one GBAS ground station is less than that of multiple ILSs for an airport. Another advantage of GBAS is the enhancement of accuracy for the whole airport.

4.5.7.3 PBN is one of the tools that supports the airspace optimization concept and should continue to be implemented according to the timelines agreed to for the Region, in conjunction with other concepts in the transition to FRA.

4.5.7.4 PBN concept provides a safe and efficient airspace design for terminal areas. SIDs/STARs are the link to the upper airspace and utilizing CCOs/CDOs provide optimal efficiency.

4.6 Move toward FRA

4.6.1 Given the diversity of the CAR Region airspace, the taskforce will develop a methodology to analyze the level of readiness of each FIR within the region and determine the steps required for Airspace Optimization, including the transition to Free Route Airspace, based on the following concepts:

- **Tactical Direct (TDR):** Tactical Directs (TDRs) are established at a national level and based upon a requested by the pilot. They are operational advantageous. TDRs should be considered as **an early iteration of the FRA concept**.

- **User Preferred Routings (UPRs):** User Preferred Routings (UPRs) may allow users to **request and gain approval by ANSPs** to deviate from the basic requirements of published ATS route network to tailor individual flight's routes to achieve more favorable weather/wind conditions and to meet other company objectives.

- **Strategic Direct Routing (SDR):** SDR allows users to plan a route using any named waypoints within a specified volume of airspace as long as the route complies with parameters set by the State. The parameters may include restrictions such as hours in which SDR rules apply, at or above altitude requirements, and maximum distance between waypoints. Users must file flights via authorized (i.e., published) routes to the entry and exit point at the boundaries of the SDR airspace volume; that is, the SDR system only applies inside the defined volume of airspace. SDR is considered a transition to implementing the Free Route Airspace (FRA) concept.

- **Free Route Airspace (FRA):** Free Route Airspace is a specified volume of airspace within which **users may freely plan a route** between defined **entry and exit points**, with the possibility to route via intermediate waypoints, without reference to the ATS route network, subject to airspace availability. FRA allows aircraft to fly close to their desired trajectory without fixed route constraints.

Note: These definitions are strictly for the purpose of this document.

4.6.2 In order to classify the capability of a particular portion of airspace to move forward with the Airspace Optimization process and the transition to FRA, the levels identified in Table 2 below will be utilized:

Level	Description
Level A	A portion of airspace which allows TDRs.
Level B	A portion of airspace which allows UPRs.
Level C	A portion of airspace which allows SDRs.
Level D	A portion of airspace which allows FRA.

Table 2: Classification of FIR Level based on Ability to Transition to SDR

4.6.3 Table 3 below identifies the requirements for each level of capability to transition to FRA.

Level	**Requirements** Requirements are a combination of Basic Building Blocks (BBBs) and ASBU Elements [ASBU Elements - ICAO GANP Portal](#)
Level A	Direct Controller-Pilot Communications (DCPC) **Currently available throughout CAR Region (Continental airspace)**
Level B	Level A requirements. ATS Surveillance. Collaborative Decision Making (CDM) process (such as CADENA) between airline operators and the ANSP. **Currently available throughout most of the CAR Region (Continental airspace)**
Level C	Level B requirements. ATM Automation System. FRTO-B0/4 -Basic conflict detection and performance monitoring. FRTO-B0/2- (Harmonized) Airspace Planning and Flexible Use of Airspace. **Currently available throughout some of the CAR Region (Continental airspace)**
Level D	Level C requirements. NOPS-B1/5 - Full integration of airspace management with air traffic flow management. FRTO-B1/4 - Dynamic sectorization. FRTO-B1/3 - Advanced Flexible Use of Airspace (FUA) and management of real time airspace data. FICE-B0/1 - Automated basic inter facility data exchange (AIDC). FRTO-B1/5 - Enhanced Conflict Detection Tools and Conformance Monitoring. DAIM-B2/2 - Daily Airspace Management information to support flight and flow Evolution. **In development, expected to be available 2028**

Table 3: Requirements for each Level of Capability

6. **Roadmap for the transition to FRA - Phased approach**

Considering both the differences in CNS/ATM capabilities and the complexities of airspace structure within the region, it is expected that the transition to FRA will be accomplished in a phased approach.

Appendix 1 of this document outlines the proposed roadmap for the Transition to FRA.
Appendix 2 of this document provides the guidance material for States/Organizations to assess their capability to conduct SDR trials and to eventually implement SDRs within their airspace.

7. Reference Documents

ICAO Reference Documents

1. Performance Based Navigation (PBN) Manual (Doc 9613)
2. Continuous Climb Operations (CCO) Manual (Doc 9993)
3. Continuous Descent Operations (CDO) Manual (Doc 9931)
4. Required navigation Performance Authorization Required (RNP AR) Manual (Doc 9905)
5. Aircraft Operations volume 2- Construction of Visual and Instrument Flight Procedure (Doc 8168)
6. Procedures for Air Navigation Service-Air Traffic Management (Doc 4444)
7. Regional Performance-based Air Navigation Implementation Plan (RPB ANIP) for NAM/CAR Regions.

Appendix 1 – Roadmap to FRA

Timeline	Objective	Responsible Parties	Comments
Present – 2027 Phase 1	Completion of the development of CAR/SAM upper airspace harmonization concept document.	ICAO NACC/WG and SAM/IG States and Organizations IATA CANSO	The ICAO NACC/WG and the SAM/IG to coordinate with States, Organizations and industry to promulgate a concept of operations for the optimization of the upper airspace throughout the CAR/SAM regions.
	90% Utilization of UPRs across CAR/SAM	States and Organizations IATA CANSO	CAR/SAM States and Organizations collaborate with IATA, CANSO and other relevant stakeholders to ensure that, wherever possible, UPRs continue to be developed and utilized across the CAR/SAM region.
	50% ANSPs test/implement SDRs within their own FIRs	ICAO NACC/WG and SAM/IG States and Organizations IATA CANSO	CAR States and Organizations through collaboration with ICAO NACC/WG and SAM/IG, IATA, CANSO and other relevant stakeholders engage in testing SDRs within their own airspace structure and ensuring that the relevant safety assessments and training are conducted.
	25% ANSPs test Cross-Border SDRs	ICAO NACC/WG and SAM/IG States and Organizations IATA CANSO	CAR/SAM States and Organizations through collaboration with ICAO NACC/WG and SAM/IG, IATA, CANSO and other relevant stakeholders engage in testing SDRs with adjacent FIRs and ensuring that the relevant safety assessments and training are conducted.
	100% Collaboration upper/lower airspace connectivity	States and Organizations	CAR States and Organizations collaborate with all relevant stakeholders to assess the TMAs and lower airspace structure to determine the possibility of waypoint-to-waypoint operations for arrivals, departures and lower level en-route flights. This assessment should include the implementation of the relevant APTA elements including CDOs and CCOs where practical.
2027 – 2030 Phase 2	75% Full SDR operations (within FIRs) in the upper airspace across the region.	ICAO NACC/WG and SAM IG States and Organizations IATA CANSO	CAR States and Organizations to implement unrestricted SDRs within their upper airspace structures.
	50% improved connectivity between upper airspace and lower airspace for SDRs	ICAO NACC/WG and SAM IG States and Organizations IATA CANSO	CAR States and Organizations to implement revised airspace concepts which include the connectivity between upper and lower airspace structures.

Timeline	Objective	Responsible Parties	Comments
	50% cross-border upper airspace SDR operations across CAR/SAM	ICAO NACC/WG and SAM IG States and Organizations IATA CANSO	States and Organizations to implement unrestricted cross-border SDRs within their upper airspace structures across the CAR/SAM region.

Appendix 2 – Guidance Material for ANSPs on SDR Trial/Implementation

Draft SDR Trial Implementation Guidance and Working Template

Introduction

This document is working document and is provided as **guidance material only**. The information contained within is not to be considered a STANDARD and ANSPs may modify or create their own methodology as required by their operations and regulations. These guidelines may be modified over time based on feedback and operational requirements.

The CANSO/IATA/ICAO Free Route Airspace (CIIFRA) Team, as part of the ICAO NACC Airspace Optimization Task Force, developed the guidance material in conjunction with SENEAM.

SDR Definition

Strategic Direct Routing (SDR): SDR allows users to plan a route using any named waypoints within a specified volume of airspace as long as the route complies with parameters set by the State. The parameters may include restrictions such as hours in which SDR rules apply, at or above altitude requirements and maximum distance between waypoints. Users must file flights via authorized (i.e., published) routes to the entry and exit point at the boundaries of the SDR airspace volume; that is, the SDR system only applies inside the defined volume of airspace. SDR is considered to be a transition to the implementation of the Free Route Airspace (FRA) concept.

Steps involved

Figure 1 below displays the process flow developed by SENEAM to plan, design, validate and implement their SDR trials. It is provided as guidance material for ANSPs to consider in developing their own process.

Table 1 below provides basic guidance on the steps required to plan, develop and initiate SDR Trials. The specific tasks are provided to assist ANSPs on developing their SDR trial planning and are not to be considered as the STANDARD. ANSPs may modify or develop their own methodology as required by their operations and regulations.

Some of the tasks in the trial process are iterative. Feedback loops will be required based on analysis of data and as a resultant, procedures/design parameters/training and publication may need to be refined.

It is important to manage the scope of the trial from the start. It is easier to add new project elements over time than to scale down after the project has already started. The main lesson learned from those already engaged in SDR trials is to “START SLOWLY”.

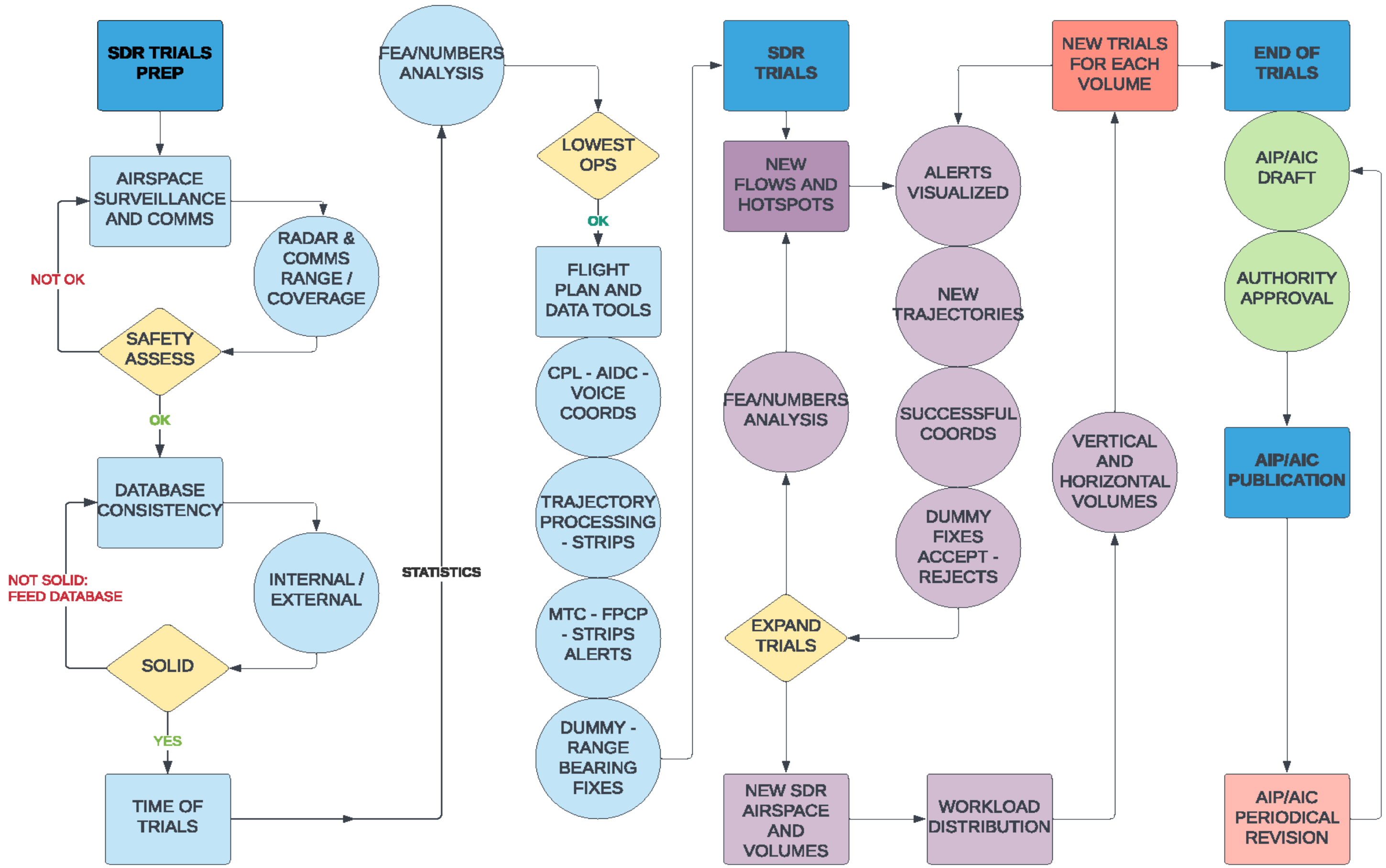

Figure 2 SDR TRIAL PROCESS - SOURCE SENEAM

Table 4 - SDR Implementation Guidelines

STEP	TASK	DESCRIPTION
PLAN	Agree on the operational requirement	Consider the desired outcome: • SAFETY • CAPACITY • EFFICIENCY • ENVIRONMENT
	Create Team	Ensure all stakeholders are involved
	Agree on the scope	• Define the project objectives (Be realistic) • Consider Timeframe • Consider Resources required e.g. (Human/Finance/Tools/Equipment/DATA availability etc.)
	Analyze the current Situation	• Consider Airspace complexity, density etc. • Analyze the CNS infrastructure • Analyze the ATM system capabilities • Analyze the ATS Procedures • Consider portion(s) of airspace that the trials be conducted in • Consider times when trials will be conducted • Collect Data • Perform Analysis • Produce report
	Safety Case	• Define safety criteria • Define the methodology for conducting the Safety Case • Hazard identification/Risk mitigation • Collect data • Conduct Analysis • Produce Report
	Training	• Develop training for ATCOs • Provide training prior to simulation exercises or live trials
	Draft AIC	• Start drafting AIC for trials
DESIGN	Engage with stakeholders	• Discussions with Regulator • Acquire proposed trajectories from Users • Consult with ATS Operations • CDM with adjacent ATSUs • CDM with TMAs/Aerodromes

STEP	TASK	DESCRIPTION
		• Engage with CNS/ATM system providers
	Draft new trajectories	• Plot new requests and analyze the effects based on existing routes
	Decision on trial parameters	• Finalize number of airline operations per day for the test • Finalize airspace sector/Flight level/UTC time period • Determine waypoints in adjacent ATSUs that may need to be in your system database • CDM with selected airline operators on waypoints that must be filed
	Publication of Trials	• Publish AIC with relevant information
VALIDATE	Test ATM System	• Ensure the ATM System database contains the necessary waypoints • Determine if FDP can accept flight plans on random tracks • Engage with CNS/ATM system providers • Test MTCD capabilities
	Validation Methodology	If using simulator: • Design exercises based on proposed trajectories • Conduct exercises • Collect/Analyze data • CDM with ATS Operations • CDM with Users • Amend proposed live trial procedures if required
		Table top exercise: • Internal exercise with Supervisors/ ATCOs on procedures • Hazard identification and risk mitigation • Make necessary changes to procedures as required
	Regulatory Approval	• Provide validation/safety case to regulators • Obtain necessary approvals
Implement	Conducting live trials	• Ensure ATCOs are trained and briefed for the operations • Ensure appropriate publications were made • Ensure Airline operators are aware of all procedures • Supervise the implementation • Collect/analyze data • Monitor Progress

STEP	TASK	DESCRIPTION
		• Make necessary changes to procedures as required
	Adjusting trial parameters	• Based on the results of the initial trials, decide on the trial parameters that can be amended (Number of operations, time of day, flight level etc. • Repeat necessary planning/design/validation steps as required • Implement new parameters • Collect Data/Analyze • Monitor Progress • Make necessary changes to procedures as required

ANSP SDR Trial Assessment Template

The template in this section provides a sample to assist ANSPs in identifying their capabilities to conduct SDR trials.

The template is provided as guidance material only and is not a STANDARD. ANSPs may modify or develop their own methodology as required by their operations and regulations.

The information filled out in the sample template is provided **as an example**. ANSPS will be required to fill out their own information based on their assessments.

To acquire blank templates, please utilize the following link:

https://www.icao.int/NACC/Documents/Meetings/2023/ATFMTF5/Blank%20SDR%20Trial%20Assessment%20Template.docx

SDR Trial Assessment Template

Section 1 – Basic Airspace Definition

NAME OF STATE/ANSP/ORGANIZATION	****
AIRSPACE BOUNDARY DEFINITION	(Coordinates)
NUMBER OF SECTORS	***

Section 2 – Airspace Density

SECTOR	TYPE OF AIRSPACE	UTC PERIOD	DENSITY	COMPLEXITY	COMMENTS
1	*OCEANIC*	*0000 - *****	*LOW*	*LOW*	
		***** - *****	*HIGH*	*MEDIUM*	
		***** - *****	*MEDIUM*	*HIGH*	
2	*CONTINENTAL*	***** - *****	*LOW*	*LOW*	
3	*CONTINENTAL*	***** - *****	*MEDIUM*	*HIGH*	
4	*OCEANIC*	***** - *****	*MEDIUM*	*HIGH*	
***	*****	***** - *****	*****	*****	

Section 3 – CNS Capabilities

SECTOR	COMMUNICATIONS	SURVEILLANCE/ADS-C	AIDC WITH ADJACENT ANSP	COMMENTS
1	*CPDLC/HF*	*ADS-C*	*NO*	• *AIDC Planned with 2 Adjacent Units for 2024* • *ADS-B SAT planned for 2025*
2	*VHF*	*SSR/ADS-B*	*With 1 Unit*	• *Full VHF coverage and redundancy* • *Full Surveillance Redundancy* • *ADS-B planned for 2025* • *AIDC with 1 additional units planned for 2024*
3	*VHF/CPDLC*	*SSR/MLAT*	*NO*	• *No VHF Redundancy* • *Partial Surveillance* • *ADS-B SAT planned for 2025* • *AIDC with 2 additional units planned for 2024*
4	*CPDLC*	*ADS-C*		• *ADS-B SAT planned for 2025*
***	****	****	****	• ****

Section 4 – ATM System Capabilities

ATM SYSTEM CAPABILITY	**PROVIDE DETAILS**	**ADDITIONAL COMMENTS IF NECESSARY**
	*Fully automated/Partially automated (Vendor - ****)*	*ATM System upgrade planned for 2025; FDP has issues accepting flights that do not file a named entry waypoint*
MEDIUM TERM CONFLICT DETECTION (STCA)	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Available and tested	*MTCD provides resolutions for flights on random routes*
SHORT TERM CONFLICT ALERT (STCA)	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Available and tested	*No comment*
ATM SYSTEM DATABASE	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Waypoints up to 200 nm in adjacent ATSUs airspace are included	

Section 5 – ATS Procedures

LETTERS OF AGREEMENTS WITH ADJACENT ATSU's	**PROVIDE DETAILS**	**ADDITIONAL COMMENTS IF NECESSARY**
	All LOAs are up to date	*There is an established procedure for periodic reviews and for dealing with critical issues that may develop and require attention*
SURVEILLANCE HAND-OFF	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Not implemented	*Discussions with adjacent units. Lack of harmonization of ATM systems is a challenge*
SEPARATION STANDARDS	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Separation Standards are not harmonized across FIR Boundaries	*CDM with adjacent ATSUs on harmonizing lateral separation standards*

Section 6 – DATA ANALYSIS/SAFETY CASE

DATA AVAILABLE TO ANALYSE TRAFFIC SCENARIOS	**PROVIDE DETAILS**	**ADDITIONAL COMMENTS IF NECESSARY**
	Some data available	*Discussions with AIM/CNS/ATM system vendors to acquire additional information*
SIMULATOR AVAILABLE TO TEST PROPOSED SDRs	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	Not available	*Table top assessment will be utilized*
PERSONNEL AVALABLE TO CONDUCT SAFETY CASE	***PROVIDE DETAILS***	***ADDITIONAL COMMENTS IF NECESSARY***
	ATS Safety Unit trained and capable of conducting safety case	

-END-

ANS COMPONENT – TASK FORCE	GOAL	REMARKS	INITIATIVES	REQUEST
CNS – SURV, COMM, AIDC	Synchronize and Harmonize Communication, Navigation & Surveillance systems across the NAM/CAR/SAM to support the transition to FRA	The CNS System is the backbone of the ANS system. It is a critical enabler to Airspace Optimization. A gap analysis of the CNS across the regions should be conducted. Use the analysis to determine the expected baseline for the achievement of regional objectives. Some ANSPs may have more advanced CNS systems, but the region should agree upon the minimum equipment that all ANSPs need to have. A plan can then be developed to help those ANSPs that are currently below the minimum.	• Surveillance data sharing/ redundancy for surveillance • Air/ground and ground/ground Communication back-up/redundancy (e.g. agreement with adjacent States to house transceivers etc.) • Exploration of alternative technologies i.e., Space-based VHF Harmonized ATM systems • MTCD capability • AIDC • CPDLC • Digital ATIS	AOTF requests assistance to: • Determine which ANSPs/FIRs have already tested and implemented acceptance of flights on random routes across common boundaries; • Determine which ANSPs/FIRs have systems that may be capable of accepting flights on random routes across common boundaries; • Find short-term solutions which may mitigate against system inability to accept flights on random routes across common boundaries;
AIM	Harmonize the methodology for electronic information sharing across the region to support the transition to FRA. Improvements to availability, reliability and integrity.	Information is the blood that flows through the veins of the ANS system. FRA relies on real-time, high integrity data for quick decision making. AIM is very important for predictability. Real time information allows for more efficient decisions. Accuracy affects safety. Availability ensures that the information reaches all the stakeholders that affect the ANS system.	• Harmonization of AIP across the Region • Standardizing or eliminating the cost of access to AIP • Reduction of duplicate FPLs • Reduction in FPL errors • More digital information • Ensuring quality management of data • Sharing of digital data	AOTF requests assistance to: • Agree on a common methodology to publish UPRs in the AIP; • Develop a common repository for a database on all approved UPRs across the NAM/CAR/SAM region so that all stakeholders can easily access the information;

ANS COMPONENT – TASK FORCE	GOAL	REMARKS	INITIATIVES	REQUEST
AGA	Guidelines for improved Airport infrastructure and design which facilitate en-route/terminal airspace optimization efforts	Airport operations sometimes negate the efficiency gains provided by improved en-route/ terminal airspace designs. Conduct an analysis of busy aerodromes in the region to determine choke spots and provide solutions aimed at improving efficiency.	• Greater collaboration between ANSP/Airlines and Airport operators re airport design, lighting, ground aids (approach) • Increased ACDM • Up to date Obstacle analysis	AOTF requests assistance to: • Identify the important aspects for connecting the construction impacts of terminal expansions and the closure of runways and taxiways to the infrastructure. • Understanding the priorities of AGA within each state will help AOTF fill in any missing milestones to establish a better plan.
MET	Improved harmonization and availability of all MET related data to support the transition to FRA. MET data available in a digital form.	Accurate/real-time MET information is important for both strategic and tactical flight planning. An analysis should be conducted across the region to determine where improvements can be made. Research other regions to determine if there are things that this region can follow. In some states, the absence of a dedicated meteorologist on staff leads to a reliance on non-meteorologists and internet sources for weather-related information. This can result in variations in weather reporting.	• Standardization of weather reports • Volcanic ash representations must be the same globally • Weather forecast and updates need to be given from an aviation perspective • Airline collaboration with ANSP on the acquisition of weather products • Special weather reports (SPECI) requirements. Should temperature change be included as a reason for SPECI issuance?	AOTF requests assistance to: • Our proposed standardization process is a collaborative effort that aims to understand and address the variations in weather reporting across states. We plan to conduct a survey that will involve all stakeholders, ensuring a more uniform approach. The goal is to present a weather report in a consistent and easily understandable format.

— END —